UNITED STATES MARINE CORPS
Logistics Operations School
Marine Corps Combat Service Support Schools
Training Command
PSC Box 20041
Camp Lejeune, North Carolina 28542-0041

AOM 6307

STUDENT OUTLINE

DETERMINE SERVICEABILITY OF AUTOMOTIVE COMPONENTS

LEARNING OBJECTIVE

1. TERMINAL LEARNING OBJECTIVE: Without the aid of references and provided automotive components with defects, determine how the defects would cause unserviceability of components, per information contained in TM 9-2320-260-20 and TM 9-2320-280-20-1. (6.3.8)

2. ENABLING LEARNING OBJECTIVES: Without the aid of references and provided automotive components with defects, per information contained in TM 9-2320-260-20 and TM 9-2320-280-20-1, determine how the defects would cause unserviceability of a/an:

a. cooling system, (6.3.8a)

b. brake system, (6.3.8b)

c. power train system, (6.3.8c)

d. suspension system, (6.3.8d)

e. steering system, and (6.3.8e)

f. exhaust system. (6.3.8f)

OUTLINE

1. DETERMINE SERVICEABILITY OF AUTOMOTIVE COMPONENTS

a. Cooling System Components

(1) A coolant hose, such as this one, should be firm to the touch. It should not have a soft or mushy feel, be brittle, crimped, or cracked.

(2) Some coolant hoses may have reinforcing wire or a spring within the hose. These items should not be penetrating through the hose and there should be no evidence of a puncture.

(3) Hose clamps should be uniformly round and not tightened to the degree where the clamp will cause the hose to be gouged or crimped.

(4) When clamps are installed correctly they should aline and, if possible, be placed approximately 1/2 of an inch above the end of the hose.

(5) Outer reinforcing material of drive belts should not be frayed and the inner surface should not be glazed, hardened or cracked.

(6) Drive pulleys should not be chipped or cracked, as this condition may wear out the belts, cause the belts to slip off, and change pulley alignment.

(7) Our trucks use two types of cooling fans; fiberglass and metal. Regardless of type, a fan is unserviceable if it is bent, cracked, broken, or loose.

(8) Radiator caps are stamped with a number to identify their pressure rating. Rating of a cap must be compatible with the radiator for the cooling system to function properly. This information is located in the organizational maintenance manual for the vehicle.

(9) A radiator cap is unserviceable if the seal is damaged, spring is stuck, or will not seal the radiator.

(10) Be careful before you condemn a radiator. Remember, class III leakage must be obvious or the radiator damaged so that it will not provide sufficient coolant to the engine.

b. Brake System Components

(1) Brake linings or pads are unserviceable if they show evidence of glazing, oil or grease contamination, severe scoring, or an uneven wear pattern.

(2) Replace brakeshoes that have loose linings or linings that are worn close to the attaching rivets. The maintenance manual for the vehicle contains the wear limits.

(3) Any cylinder within the brake system that shows evidence of leakage is unserviceable and must be replaced.

(4) Brake lines and fittings are unserviceable if they have been damaged to the extent leakage or a restriction may occur.

(5) Brakedrums and disks that are deeply scored, out-of-round, cracked, or show a severe uneven wear pattern are unserviceable.

c. Power Train Components

(1) Universal joints should not have backlash between crossshaft journals and bearings. Universal joints may be checked for serviceability by grasping the propeller shaft near the universal joint on each side of the yoke and attempting to twist each hand in an opposite direction. If any play is felt, the universal joint should be replaced.

(2) Constant velocity joints should not simply fall apart when removed from the axle housing. If they do, they are worn and should be replaced. Balls, cages and races should not be pitted or scored.

(3) Steering knuckle boots commonly called "CV" boots must not be ripped, have holes in them and the zipper must operate properly.

(4) Propeller shafts that have dents, cracks or conditions that would cause the shaft to be out of balance and allow vibration between the shaft and universal joints should be replaced.

(5) Splined shafts must be free from cracks and twisted splines.

(6) Bearings should not be pitted or scored. Look for a bluish tint that would indicate the bearing has become excessively hot.

d. Suspension and Steering Components

(1) Springs will be free from cracked or broken leaves, broken center bolts, loose U-bolts, and loose or damaged rebound clips.

(2) Shock absorbers are unserviceable if they do not have proper resistance to movement and provide proper control on the road. Shock absorbers are not acceptable if they show any leaks.

(3) Adjustable drag links are unserviceable if they are damaged to the extent that proper adjustment cannot be made. No end play is permissible in nonadjustable steering linkage.

(4) Tie rods are unserviceable if clamping bolts on the adjusting sleeve is stripped or damaged to the extent tie rods can not be properly adjusted and tightened.

e. Electrical Wiring and Connectors

(1) Electrical wiring should not be cut, broken, bare, corroded, or present the appearance of becoming hot and burnt. Burnt wires may appear gray in color and have a crisp scale deposit on them.

(2) Electrical connectors should not be broken, worn, or corroded. A connector should provide the capability of making a tight connection that will not vibrate loose.

f. Exhaust System Components

(1) A muffler should be free of cracks, leaks, holes (other than the drain hole), excessive rust, loose baffles, and dents that will restrict flow of exhaust gases.

(2) An exhaust pipe should be free of scaly rust, cracks, or dents that would restrict flow of exhaust gases. Connections to manifold and muffler should be secure and free of leaks.

g. Windshield, Windows, Mirrors, and Wiper Blades

(1) Windshield, windows, and mirrors should not be discolored to the point where they obstruct or blur vision. Small cracks in corners or outside edges of the vision line may be permissible, but keen judgment is needed here to ensure cracks will not create a danger.

(2) Edges of wiper blades must not be brittle or hard but should be soft and capable of wiping moisture off the glass without streaking.

h. Canvas and Upholstery

(1) Canvas and upholstery should not be dry rotted or torn.

(2) Be careful before condemning canvas and upholstery. Some rips and tears may be repaired.

REFERENCE:

TM 9-2320-260-20
TM 9-2320-280-20-1